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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/731,018

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Takayuki Iwasa

25873

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01/18/2007

NATH & ASSOCIATES

112 South West Street

Alexandria, VA 22314

EXAMINER

NGUYEN, HOAN C

ART UNIT

PAPER NUMBER

2871

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

01/18/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/731,018	Applicant(s) IWASA, TAKAYUKI	
	Examiner HOAN C. NGUYEN	Art Unit 2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 November 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4-15 is/are pending in the application.
- 4a) Of the above claim(s) 4,5 and 11-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/21/2006 has been entered.

In Remarks, the term "via hole" in claim 6 is considered as the contact hole.

The Fumitoshi et al. disclose (Fig. 14) a reflective LCD comprising the layer 38' contact to the via-hole or contact hole 40. The 38' is made of Ti/TiN (double) layer, where Ti layer and TiN layer are formed sequentially. However, the Ti layer is the reflective conductive layer. Therefore, examiner changes a ground of the rejection.

Examiner still believed that a capacitor is element comprising the insulating layer inserting between two electrodes, which have different voltages or electrical potential. This concept applicant may find in any basic physics book. Therefore, examiner repeated the 112-rejection from the last office action.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 7 cites “insulating films 32 formed between the first light blocking metal films 28 and the second light blocking metal films 33, wherein the insulating films serve as second storage capacitors”. The first light blocking metal films 28 and the second light blocking metal films 33 are electrical connected as claim 6 cited; therefore, the insulating films between them cannot serve as second storage capacitors since both the first light blocking metal films 28 and the second light blocking metal films 33 have same electrical potential or there is no voltage across them.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 6-8 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Fumitoshi et al. (JP2002-357820) provided by IDS.

In regard to claim 6, Fumitoshi et al. disclose (Fig. 14) a reflective liquid crystal display having pixels arranged in a matrix comprising:

- a semiconductor substrate 1;
- a transparent substrate 61 that transmits light;
- switching elements Tr formed for the respective pixels on the semiconductor substrate and electrically isolated from one another;
- first storage capacitors Cp provided for the respective switching elements and electrically isolated from one another,
- reflective pixel electrodes 41 provided for the respective pixels and having first openings 43 therebetween to be electrically isolated from one another;
- a transparent counter electrode 55 formed on a reverse of the transparent substrate to face the reflective pixel electrodes,
- liquid crystals 51 sealed between the reflective pixel electrodes and the transparent counter electrode;
- light blocking metal films 31 formed between the semiconductor substrate and the reflective pixel electrodes for the respective pixels and having second openings 30 therebetween to be electrically isolated from one another, wherein the second openings 30 do not face the first openings, and the light blocking metal films block at least part of light which is part of light which has transmitted through the transparent substrate and which has intruded into the light blocking metal films side through the first openings;

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- normal metal films 23 formed between the semiconductor substrate and the reflective pixel electrodes for the respective pixels and having third openings 24 therebetween to be electrically isolated from one another, each normal metal film being electrically connected to a switching element and a first storage capacitor corresponding thereto; and
- light blocking metal-containing films 38' formed between the semiconductor substrate and the reflective pixel electrodes for the respective pixels and electrically isolated from one another; [in paragraph 99, light blocking metal-containing films 38' showing drawing 14 has insulation to the light shielding film 38 of drawing 7A having conductivity; in paragraph 59, the Ti/TiN film functions as a conductive light-shielding film 38...the adhesion of TiN film and the 4th interlayer insulation film 37 improves by forming Ti layer between an interlayer insulating 37 and TiN film]

wherein

- the reflective pixel electrodes 41 and the light blocking metal films 31 are electrically connected to each other through first via holes 40 (contact holes); the light blocking metal films 31 and the normal metal films 23 are electrically connected to each other through second via holes 27 (contact holes); and accordingly each reflective pixel electrode is electrically connected to the switching element and the first storage capacitor corresponding thereto, and
- the light blocking metal-containing films 38 are electrically connected to the via holes and cover the light blocking metal films 31 and cover the second openings

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30 of the light blocking metal films in order to prevent the light which has intruded into the light blocking metal films side through the first openings from reaching the switching elements through the second openings.

Claim 7:

- insulating films 35/37 formed between the light blocking metal films 31 and the light blocking metal-containing films, wherein the insulating films serve as second storage capacitors.

Claim 8:

- thickness of the insulating films is set to be 20-50nm that is thinner than 400nm.

Claim 10:

- the light blocking metal-containing films are made layered TiN/Ti.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fumitoshi et al. (JP2002-357820) provided by IDS as applied to claims 6-8 and 10 and in further view of Colgan et al. (US6781650B1).

Fumitoshi et al. fail to disclose the feature of claim 9.

Colgan et al. teach forming the insulating films are made of silicon nitride for providing high capacitance due to their large dielectric constant.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a reflective liquid crystal display device as Fumitoshi et al. disclosed with forming the insulating films are made of silicon nitride for providing high capacitance due to their large dielectric constant as Colgan et al. taught (col. 8 lines 1-24).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HOAN C. NGUYEN whose telephone number is (571) 272-2296. The examiner can normally be reached on MONDAY-THURSDAY:8:00AM-4:30PM.

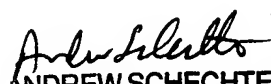
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HOAN C. NGUYEN
Examiner
Art Unit 2871

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ANDREW SCHECHTER
PRIMARY EXAMINER